

Disaster & Failure Studies Program Updates

Tanya Brown-Giammanco, Ph.D.
Director, Disaster & Failure Studies Program
NIST

NIST's Disaster and Failure Studies Program

Statutory Thrust

- Evaluate hazard events against deployment criteria
- Manage identification, vetting, and onboarding of NCSTAC members
- Develop agenda, manage logistics, and set frequency for NCSTAC meetings
- Create annual NCST reports to Congress
- Coordinate statutory activities across programs related to disasters
- Conduct field studies under various authorities

Research Thrust

- Research program focused on disaster metrology, including structural performance and social sciences
- Coordinate research activities with NIST EL Groups, Disaster Statutory Programs, NIST EL Divisions, and other NIST Labs
- Coordination with the Center of Excellence for Risk-Based Community Resilience Planning on field studies
- NSF/NIST Disaster Resilience Research Grants Program
- Outreach and dissemination

Procedures Thrust

- DFS Standard Operating Procedures
- HOT Team membership, training, and credentials
- Field and safety protocols
- Human subjects protocols
- Manage equipment for disaster metrology and personnel protection
- Data preservation, security, and management
- Field tools (NDA's, permissions, survey instruments)
- MOUs with other agencies, academics, and others
- NIST Disaster Working Group

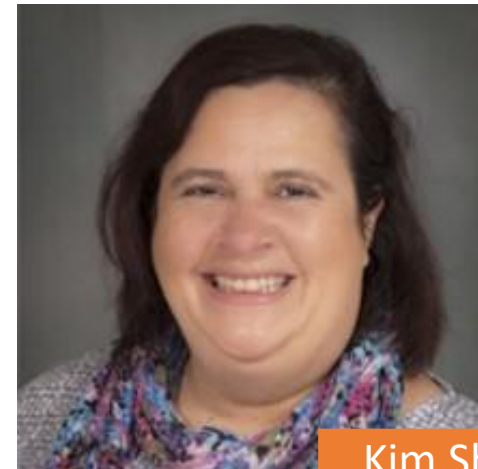
NCST Advisory Committee: Current



Gary Klein & Jeannette
Sutton: 2nd term expires
July 31, 2023



Ross Corotis, Bill Holmes & Reggie DesRoches:
2nd term expires September 30, 2023

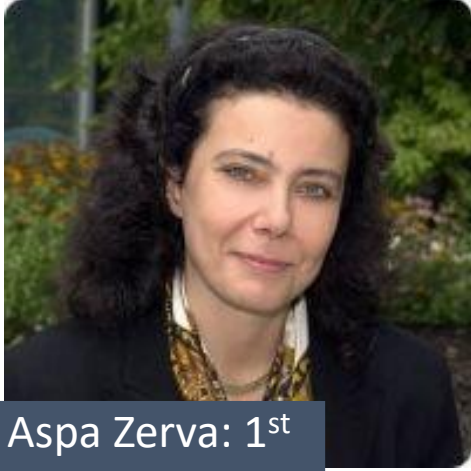


Kim Shoaf: 2nd term
expires April 30, 2023



Pepe Izquierdo-
Encarnacion: 2nd term
expires September 30,
2023

NCST Advisory Committee: New



Don Dusenberry & Aspa Zerva: 1st
term expires August 31, 2025



Lori Peek: 2nd term
expires April 2, 2026

???

???

???

1st term expires:
??, 202?

\$40M Disaster Supplemental



NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

SCIENTIFIC AND TECHNICAL RESEARCH AND SERVICES

For an additional amount for “Scientific and Technical Research and Services” to investigate the impacts of hurricanes, typhoons, and wildfires in calendar year 2022 to support the development of resilience standards with regard to weather and climate disasters, in addition to the underlying research to support those standards, and for necessary expenses to carry out investigations of building failures pursuant to the National Construction Safety Team Act of 2002 (15 U.S.C. 7301), \$40,000,000, to remain available until expended.

- Champlain Towers South NCST
- Hurricane Fiona as related to Hurricane Maria’s recovery
- Hurricane Ian

Event Scoring: October 2022-present



Date	Event	Event Consequence Score (max = 5)	Evacuation and Response Score (max = 5)
November 21, 2022	Ciranjang-hilir, Indonesia Earthquake	4.3	5.0
November 23, 2022	Duzce, Turkey Earthquake	2.0	1.0
December 13-15, 2022	Deep South Tornado Outbreak	3.0	1.0
December 20, 2022	Ferndale, California Earthquake	1.7	2.0
January 1, 2023	Rio Dell, California Earthquake	1.3	1.0
January 12, 2023	Southeast Tornado Outbreak	2.3	2.0
January 18, 2023	Dominican Republic Building Collapse	3.0	1.0
January 24, 2023	Texas Tornado Outbreak	2.7	1.0
February 6, 2023	Turkey-Syria Earthquake*	4.7	4.0
March 24, 2023	Southeast Tornado Outbreak	4.0	2.0
March 24, 2023	Pennsylvania Factory Explosion	3.4	3.0

*Preliminary Reconnaissance

Event Scoring: October 2022-present



Date	Event	Event Consequence Score (max = 5)	Evacuation and Response Score (max = 5)
March 25, 2023	Pennsylvania Apartment Floor Collapse	2.0	1.0
March 31, 2023	Mississippi Valley Tornado Outbreak	4.7	3.0
April 18, 2023	NYC Parking Garage Collapse	3.5	3.0
May 6, 2023	Aurora, CO hotel HVAC collapse	2.0	1.0
May 28, 2023	Davenport, IA apartment collapse	4.5	3.0

*Preliminary Reconnaissance

Turkey Earthquake Preliminary Reconnaissance



- M_w 7.8 and M_w 7.7 on February 6th, 2023
- NIST members
 - Matthew Speicher
 - Amin Hariri
- Joined ACI 133 Team (~42 members)
- March 25th-April 7th
- **Objective:** *preliminary* mission to collect data on building damage
 - ACI 133 damage surveys
 - functional recovery
 - inform U.S. codes and standards



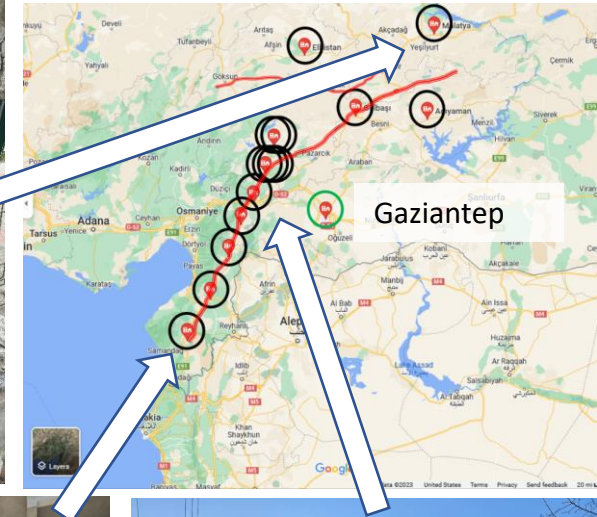
Turkey Earthquake Preliminary Reconnaissance **NIST**

Preliminary Observations:

- Details matter
- Nonstructural damage, “fix vs demo dilemma”, carbon cost
- Unintended behavior due to infill walls
- ACI 133 team: more walls, less drift, better performance

Potential future work:

- Longitudinal studies related to functional recovery
- Machine learning / damage detection
- Improved reconnaissance tools
- Case studies



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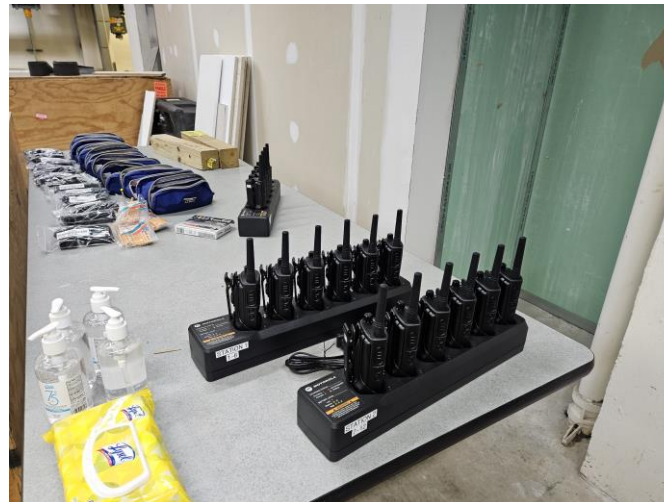
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Team Readiness

- Hot Team Members—all new DOC credentials issued in FY23 Q2
- Hot Team Members & Emergency Response Officials all obtaining official passports
- Safety
 - Hazard Review is being revised
 - Training program standardized and assigned
 - “Personal” and “Team” equipment go-kits



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Questions?